

CLAIMS

1. A recording and reproducing apparatus for audio and video comprising:

5. an AV input section that receives main information for audio and video;

an audio additional information input section that receives audio additional information which is added to the main information;

10. an AV output section that outputs the main information and audio additional information;

a recording medium that stores the main information and audio additional information;

15. a recording and reproducing section that records the main information and audio additional information to the recording medium or reproduces the main information and audio additional information from the recording medium; and

20. a controller that controls the operation of the AV input section, audio additional information input section, AV output section, and recording and reproducing section,

wherein the controller controls the sections so that the audio additional information is recorded to the recording medium, relating the audio additional information to a specific frame position in the main information.

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2. The recording and reproducing apparatus for audio and video according to claim 1, wherein the specific frame position in the main information is specified by time code of the main information, and the audio additional information is recorded to the recording medium in relation to the time code of the main information.

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3. The recording and reproducing apparatus for audio

and video according to claim 1, wherein the specific frame position in the main information is specified by the number of frames from the beginning of the main information, and the audio additional information is recorded to the recording medium in relation to the number of frames from the beginning of the main information.

4. The recording and reproducing apparatus for audio and video according to claim 1, wherein, when the recording medium is composed of a single medium, the audio additional information related to a specific frame position in a clip which is main information recorded consecutively in the single recording medium includes information for the entire clip.

5. The recording and reproducing apparatus for audio and video according to claim 4, wherein the specific frame is a beginning frame in the clip.

6. The recording and reproducing apparatus for audio and video according to claim 1, wherein dummy main information is created in order to add audio additional information to the entire recording medium, the audio additional information is related to the created dummy main information, and the dummy main information and audio additional information are recorded to the recording medium.

7. The recording and reproducing apparatus for audio and video according to claim 1, wherein, when the recording medium is composed of a plurality of recording media and the main information taken in a series of operations is divided and recorded in the plurality of recording media, the audio additional information is related to the divided main information, and the main information and the audio additional information related to the main information are recorded in a same medium.

8. The recording and reproducing apparatus for audio and video according to claim 1, wherein in recording operation of the main information and audio additional information,
5 recording of the audio additional information is terminated when recording of the main information is terminated.

9. The recording and reproducing apparatus for audio and video according to claim 1, wherein the audio additional
10 information is recorded at a different sampling rate or bit rate from audio data of the main information.

10. The recording and reproducing apparatus for audio and video according to claim 1, wherein the audio additional
15 information is recorded in a different file format from audio data of the main information.

11. The recording and reproducing apparatus for audio and video according to claim 1, wherein the recording medium has
20 a reserved region for recording the audio additional information.

12. The recording and reproducing apparatus for audio and video according to claim 1, wherein the audio additional
information can be recorded at any time when recording or
25 reproduction of main information is being done, is paused, or does not operate.

13. The recording and reproducing apparatus for audio and video according to claim 12, wherein, when starting the
30 recording of the audio additional information during recording of the main information, the audio additional information is recorded, relating the audio additional information to a frame position of main information which is being recorded upon start

of the recording of the audio additional information.

14. The recording and reproducing apparatus for audio
and video according to claim 12, wherein when starting the recording
5 of the audio additional information during pause of recording
the main information, the audio additional information is recorded,
relating the audio additional information to a frame position
of main information which is paused upon start of the recording
of the audio additional information.

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15. The recording and reproducing apparatus for audio
and video according to claim 12, wherein when starting the recording
of the audio additional information while the recording of the
main information does not operate, the audio additional
15 information is recorded, relating the audio additional
information to main information which is recorded last.

16. The recording and reproducing apparatus for audio
and video according to claim 12, wherein when starting the recording
20 of the audio additional information while the recording of the
main information does not operate, the audio additional
information is recorded, relating the audio additional
information to main information which is to be recorded next.

25 17. The recording and reproducing apparatus for audio
and video according to claim 12, wherein when starting the recording
of the audio additional information during reproduction of the
main information, the audio additional information is recorded,
relating the audio additional information to a frame position
30 of main information which is being reproduced upon start of
recording of the audio additional information.

18. The recording and reproducing apparatus for audio

and video according to claim 12, wherein when starting the recording of the audio additional information during pause of reproduction of the main information, the audio additional information is recorded relating the audio additional information to a frame position of the main information which is paused.

19. The recording and reproducing apparatus for audio and video according to claim 12, wherein when starting the recording of the audio additional information during reproduction of the main information does not operate, the audio additional information is recorded, relating the audio additional information to the main information which does not operate.

20. The recording and reproducing apparatus for audio and video according to claim 1, wherein when the main information related to the audio additional information is deleted, the audio additional information related to the deleted main information is deleted at the same time.

21. The recording and reproducing apparatus for audio and video according to claim 1, further comprising a display unit that displays a thumbnail image of the main information, wherein, in the case of one or more pieces of audio additional information being related to the same main information, when any one of the one or more pieces of audio additional information is selected, the display unit displays a thumbnail image of main information at a frame position related to the selected audio additional information.

22. The recording and reproducing apparatus for audio and video according to claim 21, wherein upon reproducing the audio additional information, a still image of the main information related to the audio additional information is displayed

continuously .

23. The recording and reproducing apparatus for audio and video according to claim 21, wherein upon reproducing the audio additional information, video information of the main information related to the audio additional information is reproduced simultaneously .

24. The recording and reproducing apparatus for audio and video according to claim 21, wherein, when one piece of audio additional information is selected, the main information can be reproduced from frame position of the main information related to the selected audio additional information.

25. The recording and reproducing apparatus for audio and video according to claim 21, wherein, during reproduction of the audio additional information, the main information can be reproduced from a specific frame position of the main information related to the audio additional information being reproduced.

26. The recording and reproducing apparatus for audio and video according to claim 1, further comprising management information for the audio additional information, wherein the management information includes information indicating state of the main information at starting the recording of the audio additional information.

27. The recording and reproducing apparatus for audio and video according to claim 1, wherein the audio additional information is recorded so that the audio additional information is related to the main information out of synchronization with the time axis of the main information.

28. The recording and reproducing apparatus for audio and video according to claim 1, wherein the audio additional information is reproduced out of synchronization with the time axis of the main information.

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29. The recording and reproducing apparatus for audio and video according to claim 1, wherein information specifying the user adding the audio additional information is recorded in a management file.

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30. The recording and reproducing apparatus for audio and video according to claim 1, wherein management information of the audio additional information is recorded in XML file.

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31. An audio and video recording method comprising:
receiving audio and video main information;
receiving audio additional information added to the main information; and

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recording the audio additional information to a recording medium so that the audio additional information is related to a specific frame position in the main information.

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32. The audio and video recording method according to claim 31, wherein the specific frame position in the main information is specified by time code of the main information, and the audio additional information is recorded in the recording medium in relation to the time code of the main information.

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33. The audio and video recording method according to claim 31, wherein the specific frame position in the main information is specified by the number of frames from the beginning of the main information, and the audio additional information is recorded to the recording medium in relation to the number

of frames from the beginning of the main information.

34. The audio and video recording method according to claim 31, wherein, when the recording medium is composed of a single medium, the audio additional information related to a specific frame position in a clip which is main information recorded consecutively in the single recording medium includes information for the entire clip.

35. The audio and video recording method according to claim 34, wherein the specific frame is a beginning frame in the clip.

36. The audio and video recording method according to claim 31, wherein dummy main information is created in order to add audio additional information to the entire recording medium, the audio additional information is related to the created dummy main information, and the dummy main information and audio additional information are recorded to the recording medium.

37. The audio and video recording method according to claim 31, wherein when the recording medium is composed of a plurality of media and the main information taken in a series of operations is divided and recorded in the plurality of recording media, the audio additional information is related to the divided main information, and the main information and the audio additional information related to the main information are recorded in a same medium.

38. The audio and video recording method according to claim 31, wherein in recording operation of the main information and audio additional information, recording of the audio additional information is terminated when recording of the main

information is terminated .

39. The audio and video recording method according to claim 31, wherein the audio additional information is recorded at a different sampling rate or bit rate different from audio data of the main information.

40. The audio and video recording method according to claim 31, wherein the audio additional information is recorded in a different file format from audio data of the main information.

41. The audio and video recording method according to claim 31, wherein the recording medium has a reserved region for recording the audio additional information.

42. The audio and video recording method according to claim 31, wherein the audio additional information can be recorded at any time when recording or reproduction of main information is being done, is paused, or does not operate.

43. The audio and video recording method according to claim 42, wherein, when starting the recording of the audio additional information during recording of the main information, the audio additional information is recorded, relating the audio additional information to a frame position of main information which is being recorded upon start of the recording of the audio additional information.

44. The audio and video recording method according to claim 42, wherein when starting the recording of the audio additional information during pause of recording the main information, the audio additional information is recorded, relating the audio additional information to a frame position

of main information which is paused upon start of the recording of the audio additional information.

45. The audio and video recording method according to claim 42, wherein when starting the recording of the audio additional information while the recording of the main information does not operate, the audio additional information is recorded, relating the audio additional information to main information which is recorded last.

46. The audio and video recording method according to claim 42, wherein when starting the recording of the audio additional information while the recording of the main information does not operate, the audio additional information is recorded, relating the audio additional information to main information which is to be recorded next.

47. The audio and video recording method according to claim 42, wherein when starting the recording of the audio additional information during reproduction of the main information, the audio additional information is recorded, relating the audio additional information to a frame position of main information which is being reproduced upon start of recording of the audio additional information.

48. The audio and video recording method according to claim 42, wherein when starting the recording of the audio additional information during pause of reproduction of the main information, the audio additional information is recorded relating the audio additional information to a frame position of the main information which is paused.

49. The audio and video recording method according to

claim 42, wherein when starting the recording of the audio additional information during reproduction of the main information does not operate, the audio additional information is recorded, relating the audio additional information to the main information which does not operate.

50. The audio and video recording method according to claim 31, wherein when the main information related to the audio additional information is deleted, the audio additional information related to the deleted main information is deleted at the same time.

51. The audio and video recording method according to claim 31, further comprising recording information indicating state of the main information at starting the recording of the audio additional information.

52. The audio and video recording method according to claim 31, wherein the audio additional information is recorded so that the audio additional information is related to the main information out of synchronization with the time axis of the main information.

53. The audio and video recording method according to claim 31, wherein information specifying the user adding the audio additional information is recorded in a management file.

54. The audio and video recording method according to claim 31, wherein management information of the audio additional information is recorded in XML file.

55. A reproducing method of reproduction from a recording medium to which main information and audio additional information.

are recorded in the audio and video recording method according to claim 31, the audio and video reproducing method comprising:

displaying a thumbnail image of main information;
one or more pieces of audio additional information

5 being related to the same main information; and

when one of the one or more pieces of audio additional information is selected, displaying a thumbnail image of main information at a frame position related to the selected audio additional information.

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56. The audio and video reproducing method according to claim 55, wherein upon reproducing the audio additional information, a still image of main information related to the audio additional information is displayed continuously.

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57. The audio and video reproducing method according to claim 55, wherein upon reproducing the audio additional information, video information of the main information related to the audio additional information is reproduced simultaneously.

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58. The audio and video reproducing method according to claim 55, wherein when one piece of audio additional information is selected, the main information can be reproduced from frame position of the main information related to the selected audio
25 additional information.

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59. The audio and video reproducing method according to claim 55, wherein during reproduction of the audio additional information, the main information can be reproduced from a specific
30 frame position of the main information related to the audio additional information being reproduced .

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60. A reproducing method of reproduction from a recording

medium to which main information and audio additional information are recorded by the audio and video recording method according to claim 31, comprising reproducing the audio additional information out of synchronization with the time axis of the main
5 information.